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THE THREE "P's" OF PHTHISIS

By

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Without fear of contradiction I might well consider the three "P's" of Phthisis, or Pulmonary Tuberculosis, to be Patience, Persistence, and Perseverance, for certainly Patience on the part of both Patient and Physician is of paramount importance. However, this brief discussion is confined to the surgical proceedures of Pneumothorax, Phreniclasis and Pneumolysis. These three relatively simple proceedures, all based on the fundamental principle of rest to the lung are very often of invaluable aid in the treatment of Phthisical patients.

To plunge abruptly into their discussion we shall begin with Pneumothorax. As indicated by its name it means air in the thoracic cavity, certainly in an abnormal relation. In simple breathing there is expansion and contraction of the chest cavity with a corresponding ingress and egress of air, caused by the altered relation between intrathoracic and atmospheric pressure. Consequently the nearer the approach to atmospheric pressure within a chest, the less the motion of the lung in that chest. It is on this simple principle that Pneumothorax is wrought. By simply injecting air (frequently referred to as "gas") into the pleural cavity the parietal and visceral layers are separated, with resultant decrease in the expansion of the affected lung. Cavities are thus collapsed and allowed to heal. Exudative lesions are compressed and healing is thus accelerated. Motion within the lung is brought to almost nil.

Indications for Pneumothorax are:

1. To partially or completely immobilize a lung.
2. Cavity in a lung.
3. Exudative type in moderately advanced stage. (This group includes all females in the teen-age, and most negroes.)
4. Spreading lesion.
5. Severe hemorrhage from a lung.

Pneumothorax is unfortunately, not the complete answer to the Phthisiotherapist's prayer, but it is a most valuable adjunct in his handling of phthisical patients.

The initial injection of air is the one which requires the utmost in skill of the operator. The two layers of pleura are in close contact and may even be adhered due to proliferative changes caused by the underlying disease. On the other hand the visceral pleura may be greatly weakened by the disease and admit of too ready puncture into a cavity. A short-bevel needle of medium capacity is slowly introduced through a novocainized area until there is observed on the watermanometer of the Pneumothorax outfit a waver in the column due to inspiration and forced expiration. There is usually a definite "feel" of altered resistance, to experienced hands, as the needle punctures the parietal pleura. The volume of the initial injection varies with different operators, but seldom exceeds 1000 cc., about 300 cc. appearing a fair average. Some clinics complete their collapse of the lung fairly rapidly, and some more slowly. To the conservative mind the slower method seems to offer the same advantages with less danger of attendant shock. It must be admitted, however, that rapid compression in

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cases of severe hemorrhage have proved to be life saving. The frequency of refillings, also, varies with different clinics. Some clinics give small amounts often, while others prefer large volumes at less frequent intervals. In places equipped and staffed for such work, the frequent, small refills might well have the preference, as they certainly maintain a more constant and even pressure, but where the operation requires much inconvenience and activity on the part of the semi-ambulatory and bed patient the less frequent refills seem to suffice. The interval observed by the writer in various clinics was from 2 days to one month. An average of from 5 to 7 days appeared to be a normal interval.

The necessity for "refills," is explained by the fact that the air injected is absorbed by the pleura. With increasing volumes of air injected into the pleural cavity the pleural surfaces are increasingly separated and the lung correspondingly collapsed, preferably to the point of complete deflation.

The amount of pressure created within the thorax by pneumothorax is a matter of individual preference. Saranac Lake Clinics never exceed negative or zero pressures while Bellevue Hospital believes in the use of positive pressures in most stubborn cases.

Unfortunately, however, the proceedure is not so simple and satisfactory as here-to-fore described. The main difficulty is encountered from adhesions between the two pleural surfaces. How to deal with these will be considered under Pneumolysis. The so-called "creeping lung" which one occasionally meets with presents a most serious obstacle to Pneumothorax. This condition is simply a progressing adhesion beginning at the hilum and eventually encircling the lung, thus pulling it out or expanding it again. Thoracoplasty is the only recourse in such a condition.

Phrenicectomy was hailed a few years ago as the long sought method of quick cure for the Tuberculous. As is so frequently the case with some over-enthusiastically received discovery, the pendulum of popular favor is now swinging away from phrenic operations. All types of operation on the phrenic nerve with paralysis of the affected side of the diaphragm as a goal have been tried. These have included Phrenectomy (same as Phrenicectomy) which is removal or complete resection of the Phrenic nerve, Phrenicexoresis, which is pulling out of the nerve, Phreniclasis, or crushing of the nerve with a clamp, and Phrenicotomy or surgical division of the Phrenic nerve and its accessory. Phrenecoexeresis, or Phrenic Avulsion, and Phrenectomy are practically obsolete now as they cause irreparable changes so that if they do not prove successful they can not be substituted by any other procedure. There is also some attendant danger of hemorrhage in cases of phrenic avulsion.

Phrenicotomy has proven just as unsatisfactory except as a means of making the diaphragmatic paralysis permanent. Therefore, the operation of choice today is the Phreniclasis. This has the advantage of being not only a simple surgical procedure, but also a relatively safe experimental measure. When properly done, the paralysis of the diaphragm lasts from six to nine months, or occasionally longer. If the patient's condition, as determined by history, physical examination, X-ray fluroscope, and other laboratory tests, warrants it, the operation can be repeated *per se*, or made permanent by performing a phrenicotomy. This is, however, rarely necessary. As an Internist, I do not presume to give any details of the surgical procedure, but will presume to drop this helpful hint. Many surgeons loop a black silk ligature around the nerve at the first operation and bring the loose ends up into the wound where they bury them just beneath the skin. This greatly facilitates locating the proper nerve at the second operation, when scar-tissue has largely obliterated the landmarks. Another timely suggestion is to be sure you get the accessory from the brachial plexus, or you will be disappointed in your results.

Some physicians object to the phrenic operation on the ground that it compresses only the lower third of the lung, and is hence indicated in very few cases. These objectors overlook the fact that when an elastic structure under tension is allowed to contract, it contracts an equal amount in all portions. A large adhesion, however, in the upper portion of the chest, which was keeping a cavity open, would prob-

ably continue to hold it open even in the face of a diaphragmatic paralysis. The apex of the lung is so located as to get practically no expansion from the up and down motion of the ribs. Therefore, the downward pull of the contracting diaphragm is its only method of expansion. This shows that Phrenics are indicated in apical lesions. Scaleneotomy in conjunction with phrenics give good results in many such cases.

Phrenic operations are indicated only in selected cases. Some of these indications are:

1. Many small lesions with or without cavities.
2. Large unilateral lesions in which Pneumothorax is impossible.
3. In many bilateral lesions, either on the worst side, or on the side where Pneumothorax cannot be given.
4. As an adjunct to Pneumothorax (cases with Diaphragmatic adhesions or where collapse therapy must be abandoned.)
5. Controlling Hemorrhage.
6. In cases where the patient cannot get Pneumothorax refills.

After a phrenic operation most patients will be seen to cough less, and to raise their sputum with much less effort.

When considering the minor results obtained by phrenic operations it is necessary to remember that it is a minor procedure. An old fibrous walled cavity will naturally not collapse as readily after a Phrenic operation as a thin walled one. Phrenics undoubtedly do have their place in properly selected cases, but one must not expect too much of them. The success of the Phreniclasis depends on how much you expected to accomplish when you resorted to its use.

Pneumolysis the last operation to be considered in this discussion, is the surgical separation of the pleural layers in order to facilitate lung collapse. This is known, strictly as internal pneumolysis, the external type being the stripping of the parietal pleura from the fascia of the thoracic wall, and having no place in this treatise. The only form of operation to be described here is the closed method of cutting pleural adhesions, or the Jacobean Operation. Through the development of the thoracoscope to its present state of perfection we are now able to make many cases of Pneumothorax much more effective than formerly.

The typical case in which Pneumolysis is indicated is one in which Pneumothorax is being used, but which is not closing a cavity adequately, because of pleural adhesions. As was indicated earlier in this paper, it is not an uncommon experience to get a 90 or 95 per cent collapse of a lung with pneumothorax, and yet fail to get the proper results because the very cavity which you are trying to close is held wide open by bands of adhesions. In such selected cases the double puncture method of intrathoracic surgery is the answer to this perplexing problem.

The operation is usually done with the patient sitting up or lying with the operative side up so that any fluid in the chest will be kept out of the way by gravity. Two trocars are introduced through the intercostal spaces, one in the axillary line and the other in the front or back of the chest. Through the trocar in the axilla there is a flexible handle having on its tip either an actual cautery or an electrosurgical knife, usually the former. The other trocar carries the endoscope, much like an ordinary cystoscope. By looking into the pleural cavity with the telescope the operator locates his adhesions and proceeds to cut them with the cautery, by direct vision. In cutting long, string adhesions, there is usually no pain felt by the patient, but if it is necessary to cut very close to the parietal pleura there is sometimes the sensation of pain. If this occurs novocaine can be applied to take care of the situation. The cutting should be done far enough from the parietal pleura to escape pain, and far enough from the visceral to escape the danger of rupturing a cavity. Low heat is usually used in the cautery so as to prevent bleeding. This makes the cutting of large thick adhesions very slow, but speed is not essential in this work. Some of these operations have taken several hours at a single sitting, and were terminated then only because the patient and the surgeon were becoming very tired of maintaining their awkward positions.

Unfortunately the X-ray picture does not always give you a clear conception of what you

are going to find in the chest. Cases which appear from X-ray to have one or two easily cut adhesions may have dozens of them, or even be inoperable, while some which appear to have very large adhesions may appear so from the angle at which the picture was taken. A small stab wound through a novocainized intercostal space causes very little discomfort to the patient and makes it well worthwhile to slip in a thoracoscope and actually see if the case is operable or not. In other words an exploratory puncture is a safe procedure, not fraught with the seriousness of an exploratory laporotomy and hence undertaken much more readily.

After Pneumolysis there is frequently a subcutaneous emphysema lasting from 2 to 4 days, but this usually passes off spontaneously without ill effects.

This paper has no bibliography, contains no actual quotations, and no names. It is merely a rambling sort of reminescence of cases actually seen and lectures heard from some of the best men in two of our country's greatest Tuberculosis Clinics today. It does not purport to be an authoritative treatise, but merely an informative discussion offered here in case any of you have the misfortune of knowing as little about some of the present day chest work as I do.

THE CLINICAL APPROACH

By
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Your kind invitation to deliver the Founders' Day Address awakened in me a natural desire to know something of the history of the Medical School of South Carolina. I found that true to South Carolinian traditions its history is full of romance. Moreover, its beginnings were closely interwoven with my own state of Pennsylvania and the city of Philadelphia. James Ramsay, one of the founders of your medical college, was the son of the famous David Ramsay, a native of Lancaster, Pennsylvania, graduate of the University of Pennsylvania, patriot and historian of the American Revolution. Henry Rutledge Frost and Samuel Henry Dickson, co-founders of the school, were also graduates of the University of Pennsylvania. Frost for two years was a resident physician in the same hospital in which I served my internship some generations later. Dr. Thomas Cooper, physician, lawyer, educator, statesman, for twelve years President of the University of South Carolina, also had contacts with Pennsylvania for he migrated there from London. Well trained at Oxford and in medicine and law, he made a distinct contribution to life in America. Cooper was President at the time when J. Marion Sims, one of the greatest figures in American medicine, was a student in the college. Sims afterwards was graduated from the Jefferson Medical College in Philadelphia, thus creating another connection between Penn's city and your University. Edmund Ravenel, first Professor of Chemistry and Pharmacy, and John Edward Holbrook, Professor of Anatomy in the first faculty, were also graduates of the University of Pennsylvania.

The Medical School of University of Pennsylvania from which nearly all of the original faculty had received their degree, was the first medical school established in this country. In a strict sense it was the daughter of the University of Edinburgh, a fact of interest to South Carolinians inasmuch as ten native sons of South Carolina between 1768 and 1778 like Morgan and Shippen, the founders of the medical school in Philadelphia, received their degree from the Scottish University.

Coming down to more recent times I find another bond uniting my Alma Mater with yours. John Guiteras, Professor of Pathology and Practise of Medicine and Clinical Medicine in your school from 1886 to 1888, left Charleston to become Professor of Pathology in the University of Pennsylvania. He was my teacher; afterwards I became his assistant and when the Cuban war broke out and his patriotic energies were enlisted on behalf of his native island, all of his work devolved upon me; thus as a pupil and associate of your former professor of medicine, I may claim a relationship to your school.

For the specific subject of my address today

Founder's Day Address delivered by invitation before the Medical College of the State of South Carolina, November 13, 1935.

I have chosen "The Clinical Approach," by which I mean the approach of the doctor to his patient. This involves a relation that is older than the memory of man. In a sense it is the same now as it was in the beginning. I shall describe it as I have observed it in a long and fairly active life.

When a patient who deems himself ill pays his first visit to a doctor the occasion is to him one of momentous significance. To the doctor the visit may be all in the day's work. If he, the doctor, does not have the right understanding of the human soul, if he cannot put himself in the patient's place, not alone will he fail to satisfy the patient but he will also not be true to the immemorial ideals of the art of medicine.

What does the patient want when he calls upon the doctor? He wants to be relieved of his suffering and he wants to be understood. The doctor must therefore not only discover the physical defects but he must also penetrate the mind of the patient. Where the power to do the one and the power to do the other are conjoined, there the patient will find a tower of strength, which is what the physician should be. As Llewellys Barker puts it "the practitioner of medicine must learn to understand not only the bodies of his patients but their minds also, their thoughts, their desires, their pleasures, their purposes, their disappointments—the strings of their behavior."

It is not enough to be able to discover the physical ills and the mental perturbations—the true physician must be resourceful, sympathetic and patient. I have wondered at times whether Job, who bore his physical sufferings with such exemplary strength, would have listened uncomplainingly and patiently to the repetitious, uninterruptible stories of complaints of some neurotic women I have seen and listened to? And yet it is demanded of the doctor that he listen patiently and with his whole mind.

To do our full duty as physicians requires a multitude of activities and procedures, but first of all it requires knowledge. It is the charm of medicine that it is never static; it grows like a snowball on an Alpine mountain, but without end. Medicine is no longer what Francis Bacon said it was in his time—"More repetition of the opinions of previous authors than the creation of new knowledge." No other human discipline is so active, none so eager to incorporate the work of other sciences into itself. One needs only to read the reports of recent meetings such as the one in Detroit or the one in San Francisco, as published in the New York Times and in Time, to realize this fact.

A further proof of activity, not always well directed we must admit, is the tremendous literary output. While the theologian is interested only in the literature of his own denomination, the lawyer in the reports of a few courts, physicians eagerly scan all the new things of all civilized countries either in the original or in abstracts in their vernacular journals. The late Colonel Fielding H. Garrison informed me shortly before his death that there were 1925 medical journals published in 1927, an enormous output, but all in a sense belonging to every physician who wants to read. Needless to say there is too much to read and a moratorium on medical printing would be a great boon, but it cannot be achieved.

Another feature differentiating the doctor from the preacher and the lawyer is his eagerness to improve himself, to increase his knowledge in other ways than by reading. That accounts for the support he gives to innumerable medical societies. I was in Detroit in October and saw thousands of practising physicians from all parts of the country, sitting for five days at meetings from 8 A.M. to 10 P.M., with only a little time out for meals. There were young men and old men, country practitioners and titled teachers. Many took notes diligently as they did when they were medical students. I was proud of my doctor clan—no other persons in the wide world make such monetary sacrifices or go to so much truoble to increase their knowledge. The public does not realize the import of postgraduate study, it overlooks the fact that thereby the doctor is able to render better service to his patients. A community could well afford to subsidize its doctors for such study.

Medicine, I am happy to say, is steadily becoming more of a science, a science that absorbs into itself the work of other sciences, especially of physics and chemistry. There is,

however, a danger in this transformation, the danger that in the pursuit of the science of medicine, the art of medicine may be neglected, may be relegated to a secondary place. It is all too easy to overrate the achievements of science. Thus H. G. Wells says extravagantly, "Scientific work is a world apart, a magic island cut off from futility." He does not realize that much of the work coming out of the science laboratory has the same cosmic value as some of the theses for the Ph.D. degree. I am afraid we are suffering in medicine as in other branches of learning "from an excess of useful knowledge and a deficiency of ideas."

There is a tendency among some medical scientists to deprecate work done at the bedside. In their eyes nothing is truly respectable that has not in it an algebraic equation or a graph. And the medical man has nearly reached the same conclusion and in consequence has developed an inferiority complex which makes him bow down humbly at the feet of the laboratory investigator. Is that a proper state of affairs? I do not think so. In my opinion the bedside offers endless opportunities for clinical research, for research which as a product of the mind requires as high an intelligence as any laboratory problem. Furthermore, a difficult case in diagnosis may make demands on the mentality such as are rarely known to the average performer of animal experiments. I am saying this because I want to make bedside study again as respectable and as reputable as it was in the day of Graves, Bright, Addison, Trousseau, Charcot, Leyden, Struempell, Da Costa, Janeway, Osler. There is, however, a difference between these great scientists—for scientists they were, although they did not make use of costly apparatus—and the best clinicians of today. The latter know enough of the science of medicine and of the possibilities of the laboratory to give their clinical studies a broader and fuller basis.

Insulin is a product of intensive laboratory research but its uses and usefulness could be tested only by scientifically-minded, honest clinicians. In pernicious anemia the association of scientific laboratory experiments and careful bedside study has given us power over a disease that until 1926 was considered utterly hopeless.

To me the finest combination imaginable is a clinician trained both in the laboratory and at the bedside, who despite his deep faith in the laboratory has not lost sight of the immemorial methods of observation, of the value of a good history and a thorough physical examination, an examination aided by all the refinements of the laboratory applicable to the case in hand. I am using the words "applicable to the case in hand" advisedly for they imply, as they are intended to do, disapproval of the wholesale or hopper method of laboratory examination so popular in many quarters.

The routine ordering of a multitude of laboratory tests though it may eventually lead to a correct diagnosis, often goes with an indifferent examination at the bedside. Let the laboratory do it, is the thought of many who fail to appreciate the value of the traditional methods of studying patients.

I look upon the laboratory not as a separate institution to which one should appeal for a diagnosis but as a limited source of information to be used to fortify or corroborate a diagnosis already made on the basis of the history and the physical examination. There are of course instances in which the final diagnosis cannot be made without the laboratory. But a provisional diagnosis is nearly always possible and that provisional diagnosis should guide and determine the laboratory studies to be made. Dr. Stillman of New York once wrote an article in which he spoke of an interne in a New York hospital who on the admission of a patient complaining of cough, wrote, 'Sputum to laboratory.' The sputum was sent every day and after many trials—I believe twelve—the report came back "tubercle bacilli present." The resident physician was under the impression that he had made the diagnosis. The question is who was more responsible, the nurse who sent the sputum faithfully every day until the result was obtained or the woman technician in the laboratory who looked conscientiously for tubercle bacilli and found them? Needless to say the interne, in his reliance upon the laboratory, had neglected a thorough physical examination.

Every young physician ought to be able to perform all the essential laboratory tests him-

self. The existence of clinical laboratories has made it entirely too easy to obtain reports, usually made by technicians to whom the patient is merely a number. I do not mean to say that the doctor should do all the laboratory tests but he should know how they are done and until his practice is very large, he should at least make his own urine, blood and puncture fluid examinations, as well as the most important chemical studies of the blood.

The student of today is very apt to think that his generation and perhaps the one immediately preceding it have made all the important discoveries known in medicine. This is far, far removed from the truth. Virtually most of the diseases we know were discovered and described ages ago. A few have been added but the terminology in which their symptoms are described is that of the past and our methods of physical diagnosis aside from the use of instruments of precision are those that we owe to Auenbrugger and Laennec.

The first step in a complete examination is the obtaining of a good history. I believe one ought to let the patient tell his own story, supplemented by occasional questions and to make no notes until one has gotten a lead or the drift of the patient's complaints; then the questions designed to bring the complaints to a focus can be more easily asked. It takes patience to listen to "organ" recitals but patience brings patients.

While asking questions and getting answers the alert physician studies the patient's psychology, his mental make-up, determining in the process where he or she exaggerates or minimizes symptoms. As I consider this phase of history taking important, I do not favor the questionaire type of blank which provides for a check or a plus or minus sign after every question. It is too mechanical and gives no chance for psychologic penetration into the patient's ego.

The family history is of great importance especially in obscure cases in which malignant disease is a possibility. A history of such disease among blood relatives renders the diagnosis of malignant disease more plausible.

Our knowledge of hereditary diseases is still fragmentary. We know much about little things, about heredity in pease and in fruit flies but little about heredity in man. By paying attention to this subject in our histories we shall in time accumulate a body of knowledge that will tell us what diseases are inherited on Mendelian or definitely biological lines. Hemophilia, angina pectoris, hypertension, diabetes, pernicious anemia and others may belong here.

A good history takes account of the occupation of the patient—not merely in a single word such as bookkeeper, laborer, carpenter or engineer; it goes into detail as to whether the work is indoors or out-of-doors, standing or sitting, in good light or bad, in a dusty or a non-dusty atmosphere. I remember a patient, a young road engineer, 29 years of age, who was supposed to be dying of metastatic carcinoma of the lung. The lungs as was shown in X-ray films were filled with innumerable small nodules. The patient was more short of breath any anyone I have ever seen. I could find no primary growth so I went a little more carefully into the history and found that as a road engineer he had been exposed to the dust of crushed stone, the unloading of which he witnessed day after day. It was easy on the basis of this historic finding to make the diagnosis of silicosis which was afterwards confirmed at autopsy.

Another feature the historian must take into account in the study of patients is the social and domestic environment. Many a case of neurosis or of phobia will remain a sealed mystery unless the doctor finds in the anamnesis the open sesame. Until the advent of Freud the key was often hard to find but by means of psychoanalysis the physician is now able to penetrate into the subconscious mind and find the hidden springs of many neuroses and anxiety states. I do not think that in the average case it is necessary to use the time-consuming and costly Freudian methods. Nevertheless, the discoveries of Freud,—the greatest psychologist since Aristotle, as he has been called—of Franz Alexander and of others have definitely attracted our attention to deep-seated disappointments and discontents, to shocks and other psychic trauma, as a cause of functional disturbances, many of which are attributed to organic disease. That sexual frustrations are an important element in such conditions will not be denied by anyone with large experience in

mental and nervous diseases; furthermore, many problems of child psychology are not understandable unless one is aware of such concepts as the inferiority complex, mother fixation, etc., ideas and phrases we owe to psychoanalysis.

The history likewise includes data as to the habits of eating, sleeping, hours of work, hours of recreation, kind of recreation, the sex life, the use of narcotics, cosmetics, etc. There are so many things that we now know play a role as possible factors in disease that the taking of a history becomes a real cross-examination.

A few days ago I was asked to speak to a group of business women on how to preserve health. Thinking about what I should say I came to realize how important it was for such women to know the value of sleep, of recreation, of slow eating, as well as the foolishness of dietetic fads, especially those designed to reduce weight.

After the history is completed then follows the physical examination, and here I want to say that one of the most important elements is routine, a routine method which the physician follows automatically in every case.

I have always told my students that I did not ask anything unreasonable in the physical examination. All that I wanted them to examine was what lay between the crown of the head and the soles of the feet— a capite ad calcem was the ancient terse phrase.

The patient must be stripped to the waist, the back and the front must be examined. There are many conditions that are only discoverable when examining the back, such as chronic forms of pneumonia, certain types of aneurysm, Pott's disease, etc.

A complete examination includes of course the reflexes, the important ones in all cases and special ones in cases of nervous diseases. Digital examination of the rectum should never be omitted—it may prevent an error in diagnosis that can cost the patient's life.

When the physical examination, including the taking of temperature, pulse, respiration, blood pressure, height and weight, is completed, the laboratory studies begin. Some of these are routine, that is they must be made in every case no matter how trivial. Once a patient came to see me from Atlantic City saying that he had had a cold for some time and that his wife had insisted that on his next visit to Philadelphia he should see me. I said "Very well, I want to examine you. He said "Oh, doctor, there is nothing the matter with me but a slight cold. I am very busy this morning. Can you give me something for my cough?" When I declined, he consented to the examination—I found that he had over seven percent of sugar in the urine and was totally unaware of his diabetic state.

The routine laboratory examinations comprise urine examination and a complete blood count. In hospitals the Wassermann test is almost routine, in private practice this is not necessary, for many persons come with ailments that are diagnosed immediately and without difficulty. The alert physician will however have the test made whenever there is the least suspicion that syphilis might be a factor.

Blood chemical studies are of value, not only in the individual case but through accumulated data they teach us certain fundamental facts about the constitution of the blood. However, one must know how to interpret the data supplied by the laboratory. During the last few years I have seen a number of persons in whom the non-protein nitrogen or the urea nitrogen was increased eight or ten fold, suggesting advanced disease of the kidneys. A careful analysis showed that this finding was the result of dehydration and not of renal disease.

Basal metabolic rates are of great diagnostic value but here too one must not be carried away by the laboratory results but must stand on the firm ground of clinical experience.

The electrocardiograph is a useful instrument which supplies a permanent record of the heart's behavior, a record that can be compared with future tracings. But one must not get the idea, in the belief that the electrocardiograph tells us all that we need to know, that it is no longer important to make the most careful physical examination of the heart. The electrocardiograph can never take the place of the experience of the careful clinician who in the last analysis is best able to arrive at a correct diagnosis and prognosis.

The x-ray is the most important medical discovery of the last fifty years; as an aid to diag-

nosis it is indispensable and as a method of treatment its value is daily increasing. The ease with which x-ray examinations can be ordered in the hospital by the intern, who gives no thought to the expense involved, as well as the information given by the roentgen ray imbues the young physician with the idea that medical diagnosis is not possible without the x-ray. He is likely to steer his course entirely by the reports received. Such an attitude has serious dangers. In the world outside, away from the hospital, x-ray examinations are made by all sorts of men, some well trained, some ill trained. Things are read into x-ray films that do not exist. I have always urged my students to depend upon the clinical findings based on careful study if the x-ray findings are at variance, unless the study was made by a conscientious and experienced roentgenologist.

My further advice is not to make unnecessary x-ray examinations for they are expensive—someone has to pay for them.

I now come to the last phase of the patient's visit to the doctor—the advice. Putting myself in the patient's place I ask myself "what do I expect the doctor to tell me?" Should I be satisfied if he said "Have this prescription filled and take a teaspoonful in water three times a day after meals." There are innocent persons who have such an Old-World awe for the doctor that they might ask nothing more, but the intelligent American would not be satisfied. The patient expects some sort of explanation of the nature of his trouble and he does not want all hope taken away. I know of few things more cruel than the taking away of hope. Dante was aware of this when he put over the doors of his Inferno—"Lasciate ogni speranza ch'entrate qui"—"Leave hope behind ye who enter here." Sometimes we cannot avoid destroying hope. The patient may insist on knowing the whole unvarnished truth. It is however a trying moment for the sensitive doctor.

Advice should be explicit and specific. I need not go into details as to what these words signify. The modern doctor is often charged with being too oracular. He clings in many instances to the habit of past ages so caustically exposed by Moliere. The educated laity today want information. The doctor must be willing to give reasons for his advice. His failure to do so drives many patients into the arms of cults. A man who says, "You have a displaced vertebra," gives an explanation that satisfies even if it is irrational and untrue. If the treatment helps it naturally convinces the patient that the diagnosis was right, although we know that it does not afford such proof.

While I am speaking of treatment at the hands of cultists I want to say that we of the regular profession—ancient and honorable—must not ignore in ostrich fashion the achievements of irregular practitioners. They may have something to teach us.

In giving advice the doctor must not overlook any obscure facts that the history has revealed, and on the basis of such facts he may have to shape the patient's life for the future. Last week a woman was referred to me from another city. She felt out of sorts and discontented, yet she was not ill physically. Examination showed no organic disease but the history revealed an utterly empty life which she tried to fill with contract and cigarettes. I said jestingly to her husband "How often does she play bridge, eight days a week?" "More than that," he answered.

Medicine is of little avail in such a case; nor is it sufficient to say "Don't smoke so much, and don't play so much." Such advice is too easy and will not be heeded. What was required in that woman was to find an occupation for her, an interesting job, and that is what I dwelt on in my talk with her and in my report to the family physician.

I am nearing the end of my homily and shall add only a few words more. The doctor who cultivates the right clinical approach will enjoy his life more than any other man. He will love medicine more and more as he grows older and will give it up only when nature sets the stop sign at last against him, and he will then prove that Robert Louis Stevenson was right when he said of the doctor, "He is the flower of our civilization; and when that stage of men is done with, only to be marvelled at in history, he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race."

BLOOD TRANSFUSION

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R. M. DACUS, JR., M.D.,
Greenville, S. C.

In 1616, William Harvey discovered the circulation of the blood, and in 1665, Richard Lower and Jean Denys of France were the first to successfully perform transfusion. The former experimented with dogs, and the latter performed the first human transfusion. They employed anastomosis of an artery to a vein with a cannula. Because of the large number of deaths, the procedure was pronounced illegal by the supreme court of France, and transfusion was abandoned until 1818 when revived by Blundell of England. Following the introduction of normal saline solution for intravenous therapy in 1875, the employment of blood transfusion was gradually abandoned in favor of saline.

At the beginning of the 20th century, the two chief dangers associated with blood transfusion, hemolysis and clotting, were rapidly being overcome. The phenomenon of the agglutination of human red cells by human serum was first pointed out by Landsteiner, and in 1901, he discovered three blood groups in humans. In 1907, Jansky discovered the fourth group and classified human blood. Moss confirmed his work. The microscopic test was now being employed to determine compatibility of the donors' blood and the number of deaths from transfusion was greatly reduced.

Just prior to the World War, Carrel and Crile perfected the suture of blood vessels and popularized transfusion by the anastomosis of artery to vein. Crile employed a cleverly devised cannula.

Soon afterward, Kempton and Brown introduced their paraffin-coated tubes to prevent blood from clotting when carried from donor to recipient, and Lindman began the multiple syringe method. The syringe became so popular that it practically did away with all the direct methods. Unger, in 1915, introduced a very ingenious apparatus consisting of a stopcock which alternately connected a syringe for blood from donor to recipient.

Read before the Greenville County Medical Society, December 1935.

Up to this time, the success of most methods depended on the rapid transference of blood from donor to recipient in less than normal coagulation time. In 1915, Lewisohn introduced the citrate method in which he mixed the donor's blood with sufficient sodium citrate to prevent coagulation, and then gave the blood slowly as one gives i. v. saline. This method became very popular because of its extreme simplicity. Inexperienced operators could now do transfusions where it was previously limited to skilled surgeons.

In more recent years, several types of syringes have been perfected by Scannell, Jube, Head, and others, by which blood can be rapidly transferred from donor to recipient almost as easily as with the citrate method. Now, almost anyone who can perform veinpuncture can do a transfusion, and it is no longer looked upon as a complicated procedure.

At the present time, the methods most generally used are the citrate method and the syringe methods of Scannell, Jube, and Head. The citrate method is rapidly being replaced by the simple syringe methods. The Scannell is the one most widely used. In Greenville, the majority of the surgeons find the Jube syringe simpler and quite satisfactory. At present, the internes at the General Hospital are using the old multiple syringe method. In Cleveland, the paraffin tubes of Vincent are still in use. At least four persons are necessary to perform a transfusion by this method, and the vein must be dissected out in both the donor and the recipient.

Most authorities agree that the whole-blood method is preferable to citrated blood. In this method, there is less likelihood of reaction, and it is possible that the blood itself has a more beneficial effect. The most ardent exponents of the whole blood method declare that there is never a time when citrated blood is equal in therapeutic value to unmodified blood. On the other hand, Lewisohn, who introduced the citrate method, believes that citrated blood has the same clinical value as whole blood, not only in cases of shock and hemorrhage but in every form of blood disease.

Sod. citrate in the dosage used is not toxic unless the patient has an alkalosis or a low

serum calcium, then a condition simulating tetany may be produced. Coagulability of citrated blood is restored soon after transfusion by the union of the citrate with the calcium ions in the blood serum. Sod. citrate, being a combination of a strong base with a weak acid, produces a distinctly alkaline solution, and so tends toward alkalosis. To overcome this type of reaction, Minot and Dodd suggest the use of i. v. calcium gluconate when the citrate method is used.

Reactions with the citrate method occur in from 20 to 60 percent as compared to 10 to 20 percent with whole blood. These reactions are generally characterized by chills and temperature elevation as are sometimes seen after i. v. glucose. They are not caused by the citrate, but are very likely due to some foreign protein or to chilling of the blood. In the citrate method, there is a much greater possibility for contamination as the blood comes in contact with the air and has to be stirred in a graduate to prevent coagulation. It must also be filtered through gauze, being transferred from one receptacle to another before being given i. v. Lewisohn showed that, by boiling the apparatus in sodium hydroxide and using triple distilled water, reactions can to some extent be reduced in number. The only advantage that citrated blood has over whole blood is the ease with which it can be given. The technique is simpler for the inexperienced physician.

More serious reactions than chills and fever may follow transfusion. They are practically always due to the use of incompatible blood. They are: petechia, hemoglobinuria, urticaria, jaundice, and allergic reactions. Convulsions, coma, and death may result. At the beginning of a transfusion, any one of the following danger signs should stop the transfusion: facial erythema, cyanosis, feeling of tightness in the chest, dyspnea, precordial pain, short dry cough, epigastric pain, nausea and vomiting, or petechiae. The typing and matching of blood should be done only by an experienced and competent person. It is not necessary to type the recipient or donor if the bloods are cross matched. Even if typed, the blood should be cross matched. That is: the cells of the donor should not be agglutinated or hemolized by the serum of the recipient, nor should the serum of the donor agglutinate the cells of the recipient. Some clinics only match the donors' cells with the recipient's serum; you may or may not get a reaction if the donors' serum agglutinates the recipient's cells. This practice is dangerous.

Indications for transfusion: Acute anemia from hemorrhage is an emergency indication for transfusion. Blood volume can be temporarily restored by i. v. saline or gum acacia, but only blood can restore the oxygen carrying capacity. A rapid reduction of blood volume to a point below 75 percent of normal leads to serious symptoms. Conditions producing acute anemia from hemorrhage include: traumatic injuries, postpartum hemorrhage, ruptured ectopic pregnancy, incomplete abortion, pulmonary hemorrhage, and bleeding peptic or typhoid ulcers.

In many cases of chronic secondary anemia, transfusion is often indicated. For example, anemia following loss of blood in small amounts over a long period of time, as with fibromyoma of the uterus or bleeding hemorrhoids. Anemia may be secondary to chronic suppurative conditions, such as osteomyelitis, empyema, or pelvic peritonitis, or it may be secondary to a malignancy. Transfusion is often a valuable preoperative procedure. Not even a minor operation should be performed with the hemoglobin below 50 per cent. In septicemia, the only indication for transfusion is anemia. Attempts to supply leukocytes and antibodies by transfusion have failed.

In several blood dyscrasias, transfusion is indicated. In purpura hemorrhagica, transfusion may be necessary to raise the platelet count of the blood to stop hemorrhage. The numerical increase in the blood platelets is often of very brief duration. The life of the blood platelet is about four days, and for this reason, frequent transfusion may be necessary. In hemophilia, the blood platelets are of defective quality. In this disease, moderately large transfusions may be necessary to supply sufficient platelets with normal coagulative power to stop hemorrhage. In hemorrhagic disease of the newborn, and in obstructive jaundice, transfusion may be indicated to supply fibrinogen, calcium, or other humoral elements necessary for

proper coagulation. In severe hemolytic jaundice and in the leukemias where there is marked anemia, transfusion is also indicated.

The amount of blood given depends on the condition for which transfusion is done. Acute hemorrhage requires a relatively larger amount of blood, from 500 to 800 c. c. being given in one or two transfusions. The average amount given at a single transfusion is 400 c. c. Donors can spare 400 to 500 c. c. without ill effect. Benefits from blood transfusion are usually greater than one would expect from simple replacement. This is attributed in part to stimulative action on hemapoiesis. Some cases of long-standing chronic anemia seem to become established on a low level with little blood production. In these cases, transfusion may bring about sharp improvement with a renewal of hemapoiesis. It is believed that small transfusions have a stimulative action on the bone marrow while large ones may depress it. Small transfusions of 100 to 200 c. c. are gaining in popularity.

In children, the amount of blood depends upon the weight of the child and the degree of dehydration. Children are often transfused for nutritional disturbances such as athrepsia and anhydremia. Dehydrated patients can be given larger amounts of blood than those with normal blood volume. Infants tolerate a relatively larger amount of blood than older children. A rule similar to Young's Rule for drug dosage may be used. It is: Weight of the patient divided by the weight plus 40 multiplied by 400 c. c. equals the amount to be given.

In children, transfusion may be difficult because of small veins. This can generally be overcome, however, if the great saphenous vein is exposed at the ankle by an incision just medial to the internal malleolus. The distal end of the vein is ligated and the vein cut half into with sharp pointed scissors. A cannula is then introduced into the vein and tied in place. Blood then can be given either by the direct or citrate method. In infants, blood may be given into the longitudinal sinus by puncture through the anterior fontanel or the jugular vein may be used. If both of these methods fail, blood may be given intraperitoneally or intra-muscularly. Blood given intraperitoneally must be typed. It may be citrated or whole blood. Intra-muscular blood need not be typed. Experiments in which bird blood was injected into the peritoneal cavity of dogs proved that a portion of the blood appears in the circulation soon after injection. Intra-muscular blood may be given daily until a suitable rise in blood elements occur. It will reduce coagulation time and has been used to stop hemorrhage from mucous membranes. Da-Costa has noted a rise of 5 per cent hemoglobin and 400,000 red cells three days after the injection of 20 c. c. of blood.

Auto-transfusion has been successfully employed in cases of intra-abdominal hemorrhage and in hemothorax. The blood is taken from the abdomen or thorax, filtered through gauze, and injected intra-venously. The blood may or may not be citrated. Ruptured ectopic pregnancy is a frequent condition that affords an opportunity to employ this procedure.

Dr. Judine, a Russian physician of Moscow, has recently experimented with transfusions of blood from dead persons. He finds that blood remains viable and unclotted up to eight hours after death. He draws the blood soon after death, citrates it, and after proper typing and serologic examination, gives it intravenously to patients in need of transfusion. Citrated blood may be kept on ice for many days and warmed just before being given.

Transfusion now has a definite place in medicine as a therapeutic agent. Advances have also been made in liver and iron therapy in treating certain forms of anemia, most notably pernicious anemia and hypochromic microcytic anemia; so that the physician must consider each case carefully to determine when transfusion is really indicated.

The citrate method is an accepted method of transfusion, being used exclusively in many large clinics; however it is a more dangerous procedure than the whole blood method because there is much more liklihood of contamination and reactions occur more frequently with its use. On the other hand the citrate method is simpler and easier to perform.

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RIDGE MEDICAL SOCIETY MEETING

The Ridge Medical Society met the nineteenth of December, 1935, at seven o'clock in the evening with a good attendance including our visitors, Dr. George McCutchen of Columbia and Dr. W. P. Turner and Dr. C. H. Blake of Greenwood.

Dr. W. P. Timmerman reported a case of infection in a parturient woman twenty years of age who has seven living children and who within three days after delivery became seriously ill.

She was examined by five other physicians.

She had severe pains in each groin and right leg with evidence of inflammation and after two months an abscess formed above pubis which was incised and after three months of illness seems about well.

This case elicited considerable discussion by various ones.

Dr. Blake reported a case of haematoma of the vagina.

Dr. Wise reported a case of a man with an abscess above the pubis.

Dr. Turner reported a case of appendicael abscess in the femoral ring.

Dr. King reported a case of puerperal infection which ended fatally.

Dr. Ballinger reported a case of forceps being left in the abdomen during laparotomy.

Dr. Turner made an interesting address on kidney lesions with their varied manifestations, symptoms, treatments, results and the tests for making the diagnosis.

This elicited much discussion and commendation.

Dr. McCutchen gave an interesting and instructive address on hyperinsulinism, with special emphasis on the diagnosis, cause and treatment.

He was highly commended for his address.

We regret the continued indisposition of Dr. J. D. Waters of Saluda, S. C.

Supper was served in The Batesburg Hotel where good fellowship reigned and much merriment ensued.

Dr. Blake spoke of his early association with our society and highly commended it for its endeavor to secure sketches of various doctors who have lived in this section.

He lauded too highly the secretary.

Dr. R. H. Timmerman told the society that Dr. John Gorrie of this state was the first to make artificial ice successfully.

Dr. Turner said that Dr. Gorrie once lived in Greenwood.

It was also stated that Dr. J. Walter Hill of Edgefield was the first doctor in South Carolina to successfully perform the Cesarian operation. The mother and child both lived and the operation was performed in the woman's home.

The Ladies Auxiliary was delightfully entertained in the home of Mrs. E. C. Ridgell.

Mrs. Dr. Geo. McCutchen of Columbia was one of the guests.

W. P. Timmerman, Secretary.
F. G. Asbill, M.D., Acting President.

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FEBRUARY, 1936

PROGRAM FOR GREENVILLE MEETING APRIL 21, 22, 23 ABOUT COMPLETED

A meeting of all of the local committees, the Program Committee and the Officers of the State Medical Association, has just been held in Greenville and all of the arrangements for the coming meeting considered.

The scientific program has been filled and so announced by Dr. George R. Wilkinson, Chairman, Greenville, S. C. For several years the plan has been to limit the number of papers on the program to about fifteen exclusive of invited guests and addresses of officers. Every effort has been made to provide a program of wide general interest to the medical men of South Carolina. The specialties have a place but for the most part the program is designed to enrich the knowledge of the general practitioner. Dr. George W. Crile of Cleveland, Ohio, Professor of Surgery Emeritus, Western Reserve School of Medicine will deliver the address in Surgery. Dr. Crile is one of the world's most famous men. The address in Medicine will be delivered by Dr. W. B. Porter, Professor of Medicine at the Medical College of Virginia, Richmond. Dr. Porter is an internist well known throughout the country.

The entertainment features this year will reflect the splendid hospitality of the city of Greenville. Owing to the death of our President during the Christmas Holidays the President's reception and ball will not be held. There will be a dinner on the evening of April 22 for all the members of the Association. At this dinner a speaker of note will be invited to address the Association on some subject of commanding interest. This dinner will take the place of private dinners by individual members of the Greenville County Medical Society.

The Woman's Auxiliary will have their own programs as usual and a large attendance is expected at their meetings.

The Poinsett Hotel will be Headquarters for the Association. Among the other Hotels are the Imperial and the Ottaray. The total attendance should be about five hundred including the Woman's Auxiliary and the Public Health Association.

THE SIMS MONUMENT DESECRATED

It was noted in the public press recently that the monument erected by the South Carolina Medical Association, the Woman's Auxiliary and the State of South Carolina on the State House grounds in Columbia as a lasting memorial to the great fame of Dr. J. Marion Sims had been damaged by vandals. The Secretary-Editor and one of the past Presidents of the

Association visited the monument to observe the damage. It was found that the eyes had been gouged out and some of the lettering on the monument destroyed. We are advised that prompt action will be taken to restore the monument to its original beauty.

SURGERY

WM. H. PRIOLEAU, M.D., F.A.C.S., CHARLESTON, S. C.

"REDUCTION OF HERNIA EN MASSE"

The reduction of an incarcerated hernia generally removes the danger of strangulation which there-to-fore was imminent. That this is not always the case it is well to bear in mind, for the reduction may occur in such a manner that strangulation almost invaraiably ensues unsuspected under cover of the abdominal wall. This is known as reduction en masse. While not common, it occurs sufficiently often to warrant our being familiar with it so as to recognize it when present. In this regard it will be well to review an article by Dr. Louis H. Nason and Dr. Charles G. Mixter in which they report five cases of their own, drawing some conclusions from them. (J.A.M.A. 105:1675, Nov. 23, '35).

The reduction of hernia en masse occurs more commonly in males, on the right side, and in the inguinal rather than the femoral region. It is important to note that for such a false reduction to take place it is not necessary that the attempts at taxis be forceful. In one case the hernial mass disappeared spontaneously and in another the patient himself made the "reduction" with little effort. The sac with its contents is forced within the abdominal cavity between the muscle layers and the parietal peritoneum into the so called properitoneal space. For such a situation to take place several factors must obtain. The sac must be sufficiently developed to admit abdominal contents and its neck not so large as to permit their easy escape. The sac must lie loosely in the hernial canal. The neck of the sac and the surrounding peritoneum must have sufficient mobility so as to permit their being displaced allowing the reduced mass to occupy a properitoneal position.

The effect of such a false reduction is almost invariably strangulation of the contents of the sac. This may follow immediately or only after a few days. The picture is misleading unless the condition is suspected, as there is no mass in the hernial region. The case becomes one essentially of strangulation and obstruction of the small intestine. The treatment is by operation through an abdominal incision.

MARLBORO COUNTY MEDICAL SOCIETY

The Marlboro County Medical Society held its Annual New Year's Meeting and Banquet Friday afternoon, January 10, 1936, at 5:00 o'clock in the Masonic Temple, Bennettsville, S. C. The following program was carried out:

1. The New Year and the Doctor—Dr. Edgar A. Hines, Sec. S. C. Med. Assoc., Seneca, S. C.
2. Submucuous Fibrosis in the Urinary Bladder—Dr. William R. Barron, Columbia, S. C.
3. Riedel's Thyroiditis—Dr. Roy B. McKnight, Charlotte, N. C.

Dinner in Banquet Hall.

4. Newer Methods in the Study and Treatment of Food Allergy — Dr. Warren T. Vaughan, Richmond, Va.

Bennettsville, S. C.

Dr. D. D. Strauss, Sec.

EYE, EAR, NOSE AND THROAT

J. F. TOWNSEND, M.D., F.A.C.S., CHARLESTON, S. C.

Agranulocytosis frequently occurs in such a severe form and in such numbers that an insight into its etiology with a view of decreasing its incidence is of great value.

An article in the Journal of the American Medical Association by Drs. Kracke and Parker gives much of value on the etiology. (The Relationship of Drug Therapy of Agranulocytosis; Drs. R. R. Kracke & F. P. Parker; Jour. A. M. A., Sept., 1935, p. 960).

"Agranulocytosis may be defined as a disease in which essentially, there is a marked diminution, or total absence, of the granulocytes of the peripheral blood, which is followed by loss of cellular resistance and this, in turn followed by infectious processes of various types. Although the basic pathologic change is a neutropenia of the peripheral blood, the underlying pathologic process in the bone marrow has not been completely worked out. It seems, however, that there is a hypoplasia of granulocytic elements in the bone marrow and it is our purpose in this paper to determine from available evidence whether or not these changes are caused by the use of certain drugs."

The etiology was discussed from a bacteriological viewpoint and from the viewpoint of a dietary deficiency, as of Vitamin G.

Menstrual coincidence, was thought to be a factor but it was found that the taking of drugs, as Cibalgine for the menstrual pain was the real cause. But they discuss the etiology mostly from the viewpoint of chemicals and drugs. As to the chemicals, industrial benzene poisoning is a frequent cause; as to drugs, they mention many; as:

Acetphenetidin, amidopyrine, nearsphenamine, certain gold salts; as crisalbine, dinitrophenol, neotibosan, acetanilid, antipyrine, aspirin, quinine, and arsenical compounds (but it should be remembered that the organic arsenical products are composed mainly of double benzene ring structure). They doubt the potency of some, as aspirin; so they say that in a summary of the cases of agranulocytosis, following the administration of drugs, it seems that at least four different classes of drugs can be incriminated. The are amidopyrine, dinitrophenol, gold salts, and organic arsenical compounds.

In these drug cases a certain susceptibility to the adverse action of the drug must be assumed to account for the small number of people affected in proportion to the large number of people that use the drugs. But certain of the oxidation products of the incriminated drugs have a depressing effect in the bone marrow and are thus capable of producing granulocytopenia. Hetz attributes the injurious action to the pyrazolon group, which is found mainly in amidopyrine, and it is from chemical reasons likely to be an erythropoietic depressant. Others believe that it is the benzene ring in some drug that causes the agranulocytopenia, from the ease of exidation of the drug. The inclusion of barbiturates does not seem to be justifiable in spite of cases reported by the Mayo Clinic.

Since amidopyrine is so often the causative factor of agranulocytopenia, some recommendations seem in order and have in places proved to be of value.

"It seems desirable that amidopyrine should be dispensed only by physicians in nonrefillable prescriptions, so that this danger of agranulocytosis may be largely removed from the unprotected public. Furthermore, it seems that every physician should prescribe amidopyrine with caution and he should not follow the careless custom of giving a patient a prescription for relief of pain with such indefinite directions as to have it refilled whenever the patient chooses to do so.

Amidopyrine is admittedly a valuable drug but the leukocyte count should be checked from time to time to determine whether or not there is bone marrow depression."

PATHOLOGICAL CONFERENCE, MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA

KENNETH M. LYNCH, M. D., PROFESSOR OF PATHOLOGY

ABSTRACT No. 303 (29642, Dec. 6, 1935)

Case of Drs. Richards and Hoshall

Student Rutledge (reading):

A Negro male, stevedore, age 24 yrs., admitted 6-20-35, died 10-25-35.

Onset in March 1935 with sharp intermittent pains in lower lumbar region, not affected by rest although worse on exertion. In May developed less severe pains in right hip, which radiated down the anterior portion of the thigh to the knee. Unable to lie on right hip due to pain. Right knee has been sore and swollen since onset. Has had a high fever almost every day since onset, and has lost about 25 lbs., although the appetite is good. No previous joint complaints. Past Illnesses: Penile sore (1926), Neisserian infection (1928). Had tonsillitis "once." No history of pleurisy, pneumonia, or tbc. Review of the systems reveals only constipation and nocturia (3-4). Family History: "No tbc., heart disease or insanity."

Examination: A thin and undernourished male, temp. 101, pulse 100, resp. 24 per minute, B.P. 100-70. Depigmented areas noted about face. Eyes, ears, nose negative. Teeth carious. "Throat red." Epitrochlear glands palpable. Chest: Expansion equal. Breath sounds distant. Few fine rales in mid-portion of rt. lung anteriorly, disappearing on deep breathing. Scoliosis of left side ("Probably due to fixation of structures around right hip"). Mediastinum neg. Heart: Apex in 5th interspace, 2 1-2 inches from midline. Regular in rhythm, rate increased, no murmurs or arrhythmias. Abdomen: flat, no organs or masses palpable. No penile discharge. General atrophy of muscles of lower extremities, more on right. Rt. leg flexed. Pain on palpation of rt. hip, over greater trochanter. "Flexion of leg of 130 degrees. Limitation of abduction, adduction and flexion of thigh. Some pain on motion of patella and structures around knee joint. No effusion noted. Tenderness along rt. femur." Transient ankle clonus on left, no other abnormalities of reflexes.

Lab: Urine completely neg. (2 exams.) except for 1-5 leukocytes per HPF. Blood (6-20-35, 10-3-25) Hb. 55 per cent(D), 50 per cent(T); WBC 6850, 20,000; polys 73 per cent, 84 per cent; lymphs 27 per cent, 15 per cent; achromia, anisocytosis, 1 plus; RBC _, _. Blood Kolmer and Kline 4 plus. Culture "from rt. femur" (7-25) staphylococcus present. Culture "from rt. hip joint" (7-11), (7-17) neg. Blood culture (6-25) neg. X-ray of chest, lumbo-sacral spine, pelvis (6-21): See chart. Mantoux 1 plus. Biopsy of femur (10-3) "Osteomyelitis of femur."

Course: Temp. showed daily afternoon rise, usually to 103, with drop during night, usually but not always to normal. This continued relatively unchanged until day of death when it fell gradually to 95 just before death. Pulse followed temp. closely. Resp. 20-36, showing no consistent tendency to rise or fall. Was placed on Bradford frame, skin traction applied. Hip-joint opened and drained on 7-11; thick greyish pus obtained. No subsequent improvement. On 7-25 was incised again, drill holes placed in trochanter from which "purulent material" was obtained. Decubitus ulcers appeared over sacrum in July, continued. No improvement. Moderate drainage from incisions. Incised again on 9-25 and 10-3, with no subsequent improvement. Given 3 blood transfusions. Gradually became weaker, decubitus ulcers enlarged and became deeper. Became unable to swallow a few days before death, gradually expired on 10-25-35.

Dr. Robert Wilson, Sr. (conducting): I understand that you all saw the autopsy, so I wouldn't be surprised if we have a unanimous verdict today. Mr. Keels, will you open the discussion?

Student Keels: The history of gradual onset of symptoms referable to the hip joint, with progressive limitation of motion, and with fever, suggests tuberculosis of the hip-joint.

The family history is negative for tuberculosis, but we cannot attach any importance to that; the important thing is, was there exposure to the tubercle bacillus? The answer is not recorded. The joint was first incised and drained on July 11th. Two weeks later, the first culture was taken. That the staphylococcus was recovered at that time is not surprising; secondary infection had then had time to become established, and an osteomyelitis of pyogenic nature was probably present at that time, as well as the older tuberculosis. When the biopsy was taken, almost three months after the original operation, it is only natural that the condition should then appear to be an osteomyelitis of the usual, non-tuberculous form.

I have read that 80 per cent of the deaths in cases of bone tuberculosis are due to a terminal miliary tuberculosis, so, at least on the basis of probabilities, that is my opinion as to the method of exitus, although there is little on the chart to suggest it. On the other hand, pyogenic infection, either from the secondary pyogenic infection of the hip, or from the numerous decubitus ulcers, could have given a septicemia as the immediate cause of death.

Dr. Wilson: Mr. Settle, do you agree?

Student Settle: Yes, I agree with Mr. Keels in the main, but I do not believe that secondary infection with septicemia was the mode of death. I believe that he died from generalized miliary tuberculosis. He had been progressively losing weight, had become quite anemic, and his temperature curve had followed the course that is rather typical for miliary tuberculosis. His chest findings on admission were also slightly suspicious.

Dr. Wilson: But couldn't the weight loss, the fever and the anemia all have been caused by the secondary infection?

Student Settle: Yes, I guess they could have.

Dr. Wilson: Mr. Gasner, can you add something?

Student Gasner: I believe that the case for secondary infection is stronger than has been made out. The terminal leukocytosis would be hard to explain on any other basis. Can we see the x-ray now?

Dr. Lynch (demonstrating x-rays and reading exerpts from the x-ray reports): "There is a definite clouding of the right hip-joint, but no definite bone destruction has taken place as yet. There is also slight irregularity in the shape of the 4th and 5th lumbar vertebrae, but as there is no evidence of bone erosion, this is taken to be a congenital anomaly. The chest is clear."

Dr. Wilson: With the x-rays now before you, would anyone like to add something further, or to change an original impression? (No answer) Dr. Prioleau, would you care to discuss the case?

Dr. Prioleau: The diagnostic part of the case seems to me to have been adequately covered, but I would like to call your attention to the bed-sores. In many cases of joint disease, not alone the tuberculous ones, bed-sores occur, and they may even become then the most important and dangerous part of the case, as has been frequently demonstrated at these conferences. All precautions should be taken to prevent their occurrence in such cases, and once they have appeared, they should be treated.

Dr. Lynch: No one has commented on the symptoms in the knee.

Dr. Wilson: Mr. Gasner, what do you think of that?

Sudent Gasner: I think that must have been a referred pain. On examination, the joint was not found to be swollen.

Dr. Lynch: And wouldn't someone like to explain why he couldn't swallow for the last few days?

Dr. Wilson: Mr. Cantey, you explain that.

Student Cantey: I think he was just so run down he couldn't swallow, or maybe he didn't want to. That is not uncommon on the last day or two before death from any illness.

Dr. Wilson: The working diagnosis recorded on the chart by the examiner who saw him on admission was tuberculosis of the hip. Later that was changed to acute arthritis of the hip.

Student Rutledge: I think the diagnosis was changed on the basis of two completely negative results with the Mantoux test, and a subsequent one-plus test, as recorded on the abstract.

Dr. Wilson: The Mantoux test is not uncommonly negative in a case of overwhelming tuberculous infection.

Dr. Lynch: I am sorry that Dr. Hoshall could not be here today to discuss his case, but he has been detained in the dispensary.

I do not doubt that the biopsy report on this case was one of the factors to cause the diagnosis to be changed from tuberculosis. And that brings out one of the points of this case: any laboratory report should be considered in the light of the pertinent clinical data at hand. In such a case, with an open, draining sinus communicating with the bone for three months, nothing else could have been anticipated from a biopsy, unless taken very deeply; a biopsy taken at the first operation would probably have revealed the true condition.

There was an extensive tuberculosis of the head of the femur, with erosion into the joint. As you can see here (demonstrating autopsy specimens), the articular surface is completely eroded away, and the surface of the bone left appears fussy and mossy. There is extensive destruction of this area, and considerable granulation tissue formation. There is an apparent shortening of the neck of the femur, from erosion of the head as a result of friction; this is also quite characteristic. The acetabulum was similarly eroded, and there was extensive destruction of the margins of the joint. The base of the acetabulum was completely eroded through.

Such a condition is necessarily a blood-borne infection. The bacilli usually lodge in the bone proper, at the epiphysis, and then, as the head of the bone becomes caseous, the joint becomes involved, and later still, the other bone composing the joint. Occasionally tuberculosis is primary in the joint itself, but that is quite rare.

The oldest tuberculous lesion in this case was apparently in the mediastinal and mesenteric lymph nodes, and hence the original infection may have been either via the respiratory tract or the intestinal tract. There were no recognizable lesions of the parenchyma of the lungs or in the intestines at the time of death. In the bone tuberculosis of children, the bovine bacillus is commonly the infecting organism, rather than the human bacillus. Since this organism almost always enters by the intestinal tract, it is not uncommon to find the mesenteric lymph glands showing the oldest lesions. In this case, caseation is more evident microscopically than is the cellular response, and that inclines me somewhat towards the possibility of a bovine infection in this case, that appearance being the usual one in bovine tuberculosis.

This man died of a generalized miliary tuberculosis. I don't know whether those of you who argued for miliary tuberculosis did so because you remembered the autopsy or not, but you should have been able to support your case better. A patient who has tuberculosis, and who dies during the course of active tuberculous infection, usually dies from tuberculosis, and that usually in a miliary form, at least in the last analysis. Even cases of chronic tuberculosis commonly terminate in this way, as you saw in an interesting autopsy this morning. Of course secondary infection could have been the fatal factor here, but that would have been much more unusual.

Student Gasner: How do you explain the pain in the knee?

Dr. Lynch: There was nothing in the autopsy to explain it.

Dr. Chamberlain: Pain in the knee is given by the older authors as one of the earliest symptoms of tuberculosis of the hip-joint. It is thought that the pain is a referred pain, probably transmitted along the saphenous nerve.

Dr. Wilson: I often wonder if we couldn't come much nearer the correct diagnosis than we do by going into the history in more detail. I always note that when the symptoms are all referable to one area, there is a tendency to deal skimpily with more remote parts of the body. In this case, the suspicion of tuberculosis, that was evidently in the examiner's mind, should have brought careful questioning as to respiratory symptoms, possibly at some remotely distant time. With such information at hand, it would probably have been very hard to convince the examiner that the condition was not tuberculous.

WOMAN'S AUXILIARY

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REPORT TO THE WOMAN'S AUXILIARY OF THE SOUTHERN MEDICAL ASSOCIATION

Greetings from South Carolina the state which is at present busy trying to double its Student Loan Fund!

Four years ago the Board realized that a common objective for which all units could work would probably serve better than anything else to maintain the interest that sometimes wanes after organizations, so the humane project of building up a fund for the use of doctors' sons and daughters who lack sufficient money to complete a course at Medical College was begun. The work is so very worth while and has met with such signal success in South Carolina that I should like to outline our schedule of requirements for the use of the fund hoping some other states will adopt a like plan.

Each Auxiliary is assessed $1.00 per paid up member yearly in addition to any other donation which it cares to make. The applicant for the use of the fund may secure $250 a year for four years, without interest, upon presenting proper credentials as to character, scholastic records, etc., and a note bearing an acceptable endorser. After graduation and internship the recipient agrees to begin payment on the loan by monthly installments, a course which one beneficiary is following at this time.

At present there is a sufficient sum on hand for the founding of one scholarship and the State President and Student Loan Fund Chairman, Mrs. L. O. Mauldin of Greenville have high hopes of so materially increasing the amount this year that we shall be able to establish a second scholarship by September.

In addition to this drive, the State Organization Chairman has placed applications before several Medical Societies asking permission to expand, and more important still, is trying to keep alive the Auxiliaries already formed. It is very discouraging to labor over the organization of a unit only to have the joy of expansion offset by the death of an established branch, a situation which is constantly arising in this state.

Preparation of biographies of deceased doctors of South Carolina has progressed with much interest and while we anticipate that considerable time will be required for the completing of necessary data, we expect when it is completed to publish the material in book or pamphlet form.

We appreciate the privilege of contributing this letter and hope to have real news when the time comes for presenting the next one.

Our State Convention will be held April 21-22-23 in Greenville.

With best wishes for a successful Auxiliary year to all states affiliated with the Auxiliary to the Southern Medical Association, I am,

Most Cordially,

Mrs. Clarence E. Owens, President, of the Auxiliary to the S. C. Medical Association.

Mrs. E. Clay Doyle, Seneca, S. C., Chairman of Publicity of the Auxiliary to the S. C. Medical Association.

SOUTH CAROLINIANA

J. I. WARING, M.D., CHARLESTON, S. C.

Pediatric Training Yesterday and Today—D. L. Smith, Spartanburg—Sou. M. J. 28 Dec. 1935—1138. A sketch of the development of present day facilities for training in pediatrics, with a description of the Southern Pediatric Seminar held at Saluda, N. C.

John Gorrie: H. M. Taylor, Jacksonville, Fla. Sou. M. J. 28 Dec. 1935—1075. The life of a Charlestonian who later became a Floridian, inventor of an ice-making machine and father of modern air-conditioning.

Well Leg Traction as an Aid in the Correction of Some Stereotyped Orthopedic Deformities —J. W. White, Greenville. Sou. M. J. 29 Jan. 1936—45. A discussion of principles involved and the application in various conditions.

An Instrument Facilitating Use of the Flanged Nail in Treatment of Fractures of the Hip. —J. W. White, Greenville. J. of Bone & Joint Surgery. 17 Oct. 1935—1065. A description of this simple instrument.

The Football Knee—J. W. White, Greenville. The Journal-Lancet 55 Dec. 1, 1935—773. The author finds this due usually to damaged cartilage or free bone which has been scaled off, and discusses treatment, with a leaning well to the conservative side.

Experiences with Well Leg Traction Apparatus —J. W. White, Greenville. Sou. Surg. 4 Dec. 1935—396. An illustrated article describing the use of this method in scoliosis, dislocation of one innominate bone, dislocated hips, ankylosis of the hips, intertrochanteric fractures, fractures of the femoral shaft.

Femoral Shortening for Equalization of Leg Length—J. W. White—Greenville. J. of Bone & Joint Surg. 17 July 1935—597. Illustrated description of technique and favorable results in a series of 45 cases.

Enteric Cysts—O. B. Mayer, Columbia. Ann. Int. Med. 9 Dec. 1935—797. An illustrated case report of this rare condition in a twelve-year old boy who recovered from operation.

Infections of the Terminal Digital Phalanx—W. H. Prioleau, Charleston. Sou. M. & S. 97 Mar. 1935—127. A short discussion of diagnosis and treatment.

NEWS ITEMS

Rates of Greenville Hotels for State Association Meeting

The Poinsett:
Single rooms—$2.50 to $3.50 per day.
Double rooms—$3.50 to $6.00 per day.
All rooms have private bath.

The Ottaray:
Single, without bath—$1.50.
Single, connecting bath—$2.00.
Single, private bath—$2.25 and $2.75.

The Imperial:
Single without bath—$1.50.
Single with bath—$2.00 and $2.50.
Double without bath—$2.50 each person.
Double with bath—$3.00 and $3.50 each.
Double with connecting bath—$2.50 and $3.00 each.

Dr. Kenneth M. Lynch, Charleston, has been appointed a member of the Council of the Southern Medical Association from South Carolina for a regular Council term of five years, the appointment having been announced recently by the President, Dr. Fred M. Hodges, of Richmond. Dr. Lynch succeeds Dr. Frank H. McLeod, of Florence, who having served the constitutional limit, was not eligible for reappointment.

SOCIETY REPORTS

MINUTES OF THE REGULAR ANNUAL MEETING OF THE MEDICAL SOCIETY OF SOUTH CAROLINA, HELD ON TUESDAY EVENING, DECEMBER 10th, 1935, at 8:30 O'CLOCK, AT THE FORT SUMTER HOTEL

The meeting was called to order by the President, Dr. Francis B. Johnson.

The Roll was called, there being fifty-three members present.

Guests included members of the faculty of the Medical College, members of the Medical Corps of the Navy Yard and Fort Moultrie, and visiting physicians.

The Minutes of the meeting of November 26th were read and confirmed.

The Secretary moved that in view of the fact that the second meeting for December falls on Christmas Eve, it be dispensed with.

This was seconded and carried.

The election of Officers was then taken up, with the following result:

President: Dr. W. Atmar Smith;

Vice-President: Dr. J. Austin Ball; Drs. J. J. Ravenel and Hillyer Rudisill having requested that their names be withdrawn.

Secretary-Treasurer: Dr. Joseph I. Waring.

Librarian: Dr. W. C. O'Driscoll.

Commissioner of Roper Hospital: Dr. G. McF. Mood;

Member Board of Censors: Dr. Edward Rutledge;

Delegate to the State Association: Dr. Robert Wilson, Jr.

Alternates: Drs. P. G. Jenkins and Paul W. Sanders withdrew their names, and the following were elected: Drs. John C. Beckman, A. J. Buist, Jr., T. H. Martin, E. W. Townsend, I. R. Wilson, Jr.

Honorary Fellow: D. J. Sumter Rhame.

Dr. F. G. Cain stated that a vacancy had occurred in the office of Attorney for the Society as a result of Mr. George H. Moffett having relinquished his practice; and moved that the Secretary communicate with Mr. Moffett and thank him for his services in the past, and explain to him that his position will have to be filled.

Dr. Edward Rutledge moved for the election of a new attorney, and nominated Mr. Arthur R. Young.

Dr. Jervey Ravenel nominated Mr. Thomas P. Stoney.

Dr. A. J. Buist suggested that due to the fact that Messrs. Hagood, Rivers & Young were handling letters for the Society in connection with the Ross Estate, and were familiar with the Society's affairs, he believed that it would, therefore, be better to elect the firm to act as legal representatives of the Society.

Dr. Rutledge accepted Dr. Buist's nomination of the firm of Hagood, Rivers & Young as a substitute motion.

Dr. Ravenel then nominated the firm of Stoney, Crossland and Pritchard, withdrawing his previous nomination of Mr. Stoney.

Ballots were cast, and the firm of Hagood, Rivers & Young were elected as Attorneys for the Society.

Dr. Mood moved that in advising this firm of their election as the Society's legal advisors, that they be requested to have Mr. Young handle the affairs of the Society.

The President then had the newly elected officers conducted to their chairs. He then spoke briefly of his pleasure in serving as President, and reviewed the chief events of his term, particularly the discussion of Health Insurance and the visit of Dr. Bierring.

Dr. O'Driscoll moved that the Secretary send a letter of appreciation to Dr. Johnson.

This was seconded and carried.

The President, Dr. Smith, spoke a few words expressing his pleasure in taking his new office.

The meeting then adjourned.

J. I. Waring, M.D., Secretary.

NEWS ITEMS

PROGRAM OUTLINE OF THE SOUTHEASTERN SURGICAL CONGRESS, NEW ORLEANS ASSEMBLY

March 9-10-11, 1936—Following Mardi Gras

If you have never attended one of these assemblies you will have missed something. The New Orleans assembly should be the best one. Don't miss it. Three full days. Doing something every minute. Mid-day round table discussions — Night session Monday — Banquet Tuesday.

The following men will appear on the program with papers and clinics:

Dr. Arthur W. Allen, Boston, Mass.
Dr. Roger Anderson, Seattle Wash.
Dr. Charles O. Bates, Greenville, S. C.
Dr. W. T. Black, Memphis, Tenn.
Dr. O. P. Board, Birmingham, Ala.
Dr. Guy Caldwell, Shreveport, La.
Dr. Thomas E. Cormody, Denver, Col.
Dr. Virgil S. Counseller, Mayo Clinic.
Dr. George W. Crile, Cleveland, Ohio.
Dr. Roger G. Doughty, Columbia, S. C.
Dr. John F. Erdmann, New York, N. Y.
Dr. Edgar Fincher, Jr., Atlanta, Ga.
Dr. Paul G. Flothow, Seattle, Wash.
Dr. Emmerich von Haam, New Orleans, La.
Dr. W. D. Haggard, Nashville, Tenn.
Dr. Arthur Hertzler, Halstead, Kan.
Dr. Gerry Holden, Jacksonville, Fla.
Dr. C. C. Howard, Glasgow, Ky.
Dr. Chevalier Jackson, Philadelphia, Pa.
Dr. Harry H. Kerr, Washington, D. C.
Dr. Joseph E. King, New York, N. Y.
Dr. Francis E. Lejeune, New Orleans, La.
Dr. Jennings Litzenberg, Minneapolis, Minn.
Dr. James S. McLaster, Birmingham, Ala.
Dr. Fred Rankin, Lexington, Ky.
Dr. J. U. Reaves, Mobile, Ala.
Dr. Curtice Rosser, Dallas, Texas.
Dr. Alfred A. Strauss, Chicago, Ill.
Dr. A. Street, Vicksburg, Miss.
Dr. J. W. Tankersley, Greensboro, N. C.
Dr. Alan C. Woods, Baltimore, Md.

If you do not receive a program by the first of March write for one—Dr. B. T. Beasley, Atlanta, Ga.

From Herald & News, January 9, 1936:

Dr. T. H. Pope and Dr. J. K. Wicker brought an appeal from the Newberry County Medical association that the county delegation use their influence in having the state appropriation for the South Carolina Medical school raised. The amount as stated in the budget for 1936-37 for the medical college would reduce the rating of the school from an "A" college to a "B" college. This would mean that those men who are now there and who will finish cannot stand examinations anywhere outside of South Carolina, they cannot be interned in any hospitals outside the state, or practice anywhere only in South Carolina. Neither can they compete for any United States medical job, all because they will be graduates of a "B" standard college. Dr. Pope quoted from an editorial in The State on Dr. S. E. Harmon, who said we would rather have no medical college than a "B" standard college. South Carolina would be the only state in the Union with a "B" standard medical college. Dr. Wicker said that other medical colleges have large endowments, which the College of Charleston does not have, and as it has high standards, and many men who have graduated there have become famous in their lines, we should try to keep it as it is. It is one of the oldest medical colleges in the United State, only three being older.

Important to Your Babies!

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Larsen "Freshlike" Strained Vegetables are first quality garden fresh vegetables cooked, strained and sealed under vacuum to protect vitamins and mineral salts. For further protection we seal in special enamel lined cans.

All Varieties 10c Per Can

LARSEN'S "Freshlike" Strained Vegetables

THE LARSEN COMPANY, Green Bay, Wis.

THE SOUTH CAROLINA DENTAL ASSOCIATION PROPOSES TO AMEND THE LAW ON ADVERTISING DENTISTS IN THIS STATE IN LINE WITH THIRTY ONE OTHER STATES

Paragraph 4, *Section* 18, *Present South Carolina Law.*

For advertising in any such manner as to defraud or deceive, or that will tend to defraud and deceive the public, and when proof is submitted to the Board that any dentist has failed to perform any work in any manner and at such price or prices as may have been advertised, or when any dentist shall have failed or declined to perform over, without further remuneration, in any period which may have been specified such work as he may have guaranteed through advertising or in any other manney.

Substitute Oregon Law as Follows for Paragraph 4, *South Carolina Law.*

For unprofessional conduct, or for gross ignorance or inefficiency in his profession. Unprofessional conduct shall mean employing what is known as "cappers" or "steerers" to obtain business; the obtaining of any fee by fraud or misrepresentation; wilfully betraying professional secrets; employing directly or indirectly any student or any suspended or any unlicensed dentist to perform operations of any kind, or to treat lesions of the human teeth or jaws, or to correct malformations thereof; making use of any advertising statements of a character tending to deceive or mislead the public; advertising professional superiority or the performance of professional services in a superior manner; advertising prices for professional service; advertising by means of a large display; glaring light signs; or containing as a part thereof the representation of a tooth, teeth, bridgework or any part of the human head; employing or making use of advertising solicitors or free publicity agents or advertising any free dental work or free dental examination; or advertising to guarantee any dental service, or to perform any dental operation painlessly.

The South Carolina Dental Association proposes to amend the present law on Advertising Dentists and bring it in line with thirty one other states which have adopted similar laws. The amendment will be very much broadened in line with the Oregon State Law which has been up-held by the Supreme Court of the United States.

BOOK REVIEWS

POLIOMYELITIS:—By John F. Landon, M.D., Attending Physician, Willard Parker Hospital, Special Consultant in Pediatrics, Womens Hospital, New York City, Assistant Attending Pediatrician Roosevelt Hospital; and Lawrence W. Smith, M.D. Pathologist, Willard Parker Hospital, formerly Assoc. Professor of Pathology, Cornell Medicall School and Harvard Medical School. Cloth. Price $3.00. Pp. 275, with 18 illustrations. New York City.

The Macmillan Co. 1934

This is a handbook for physicians and medical students. It is based on a study of the 1931 epidemic in New York City.

During the summer and early fall of 1935 a rather extensive, but mild epidemic of poliomyelitis occurred in North Carolina. It caused a great deal of consternation, indeed almost panic among the people there, and to some extent in adjacent states.

South Carolina escaped but the populace was apprehensive, and anxious for information.

Many physicians who had had no experience with this dreaded malady, had many questions put to them which they could not answer.

While many problems today still remain, yet a vast amount of research has been done, and much has already been learned.

This very practical volume by Landon and Smith gives an excellent first hand account of the epidemiology, the symptomatology and the diagnostics. Of course prophylaxis and treatment are far from settled. This practical work which is free from padding brings our knowledge up to date and should prove very helpful to anyone who wishes to get a concise and accurate outline of poliomyelitis.

The book is well printed on good paper. The illustrations are very helpful in portraying exactly what happens to the patient and his nervous system.

It is in short a book well worth having in ones library and is one that is easily read.

R. M. Pollitzer, M.D., F.A.A.P.
Greenville, S. C.